

Our ref: KON-1827



Client's ref: P6232-001-0000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Application of: E. KATOH et al. : Art Unit: 1774

Serial No. : 10/673,104

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Examiner: P. R.

Filed : September 26, 2003

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Schwartz

Title : INK-JET RECORDING SHEET :

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DECLARATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

S i r:

I, Yukako Taka, hereby declare and say as follows:

1. I am one of the inventors of the present invention.
2. I graduated from Tokyo Metropolitan University. Since April of 1999, I have been employed by Konica Corporation (now Konica Minolta Photo Imaging, Inc.), the Assignee of

the above-referenced application. During my employment at Konica, I have engaged in the research and development of silver halide photographic emulsions and ink-jet recording materials.

3. I am aware that the Examiner has rejected the above-referenced application based on Uto (US 6,616,991). Tests have been performed and are reported herein to demonstrate the superiority of an ink-jet recording sheet with an ink receiving layer having a polymer containing not less than 60 weight% 1,2-polybutadiene compared to an ink-jet recording sheet with an ink receiving layer containing less than 60 weight% 1,2-polybutadiene. These tests were performed by myself or under my direct supervision and control.
4. Recording sheet 1 appearing in Table 1 at page 91 of the above-referenced application was prepared in accordance with the preparation method described at pages 80-85 of the application. Recording sheet 1 contained the compound B-1000 in Oil Dispersion solution (B-1) at page 81 of the application. B-1000 has 85 weight% 1,2-polybutadiene and 210 carbon atoms.

5. Recording sheet 2 appearing in Table 1 at page 91 of the above-referenced application was prepared in accordance with the preparation method described at page 85 of the application. Recording sheet 2 contained the compound B-2000 in Oil Dispersion solution (B-2) at page 82 of the application. B-2000 has 65 weight% 1,2-polybutadiene and 150 carbon atoms.
6. Recording sheet Q1 was prepared in the same manner as Recording sheet 1, except that B-1000 was replaced with Poly-bd R45HT. Poly-bd R45HT was employed in sample 17A in Table 3 at page 111 of the application. Poly-bd R45HT has 20 weight% 1,2-polybutadiene and 210 carbon atoms.
7. Recording sheet Q2 was prepared in the same manner as Recording sheet 1, except that B-1000 was replaced with E-1000-8. E-1000-8 was employed in sample 7B in Table 4 at page 126 of the application. E-1000-8 has 58 weight% 1,2-polybutadiene and 70 carbon atoms.
8. Recording sheets 1, 2, Q1 and Q2 were evaluated for gas discoloration as follows. A solid image of magenta (M) and a solid image of cyan (C) each having an optical density of 1.0 were printed on each recording sheet using ink-jet

printer PM-920C manufactured by Seiko Epson Corporation. Next, the printed images were treated in an ozone atmosphere of 5 ppm for 10 hours. Gas discoloration was measured after ozone treatment. The ratio of the residual image density to the initial density was calculated. The ratios are shown in the attached Table A2 for magenta (M) and cyan (C).

9. Recording sheets 1, 2, Q1 and Q2 were evaluated for delamination as follows. After printing the images to determine the gas discoloration characteristics, the printed recording sheets were left in the outside environment for one week. The printed recording sheets were set at 45 degree angles facing the ground. During this particular week, it rained for 3 days. After the one week environmental exposure, the recording sheet surfaces were visually observed for delamination according to the following criteria:

- A: no delamination was observed on the surface of the recording sheet
- B1: delamination was observed in the printed area of the recording sheet
- B2: delamination was observed in the entire surface of the recording sheet

The results of the delamination evaluations are illustrated in the attached Table A2.

10. As shown in the attached Table A2, Inventive Recording sheet 1 and Inventive Recording sheet 2 prepared in accordance with the present invention exhibited less gas discoloration compared to Comparative Recording sheet Q1 and Comparative Recording sheet Q2 falling outside the scope of the present invention. Also, Inventive Recording sheet 1 and Inventive Recording sheet 2 exhibited no delamination (A rating), while Comparative Recording sheet Q1 and Comparative Recording sheet Q2 exhibited delamination across the entire surface.
11. Table A2 also demonstrates the criticality of 60 weight% 1,2-polybutadiene. For example, Inventive Recording sheet 2 (65 weight%) is noticeably superior to Comparative Recording sheet Q2 (58 weight%), even though both recording sheets have close to 60 weight% 1,2-polybutadiene.
12. Table A2 also shows the criticality of 60 weight% 1,2-polybutadiene, since Inventive Recording sheets 1 and 2 have similar properties, and since Comparative Recording sheets Q1 and Q2 have similar properties. Thus, the criticality is based on whether or not a recording sheet has greater than 60 weight% 1,2-polybutadiene. The

criticality is not simply based on the increased or decreased weight% of 1,2-polybutadiene.

13. I believe that the criticality of 60 weight% 1,2-polybutadiene is not taught or suggested by Uto, and that those skilled in the art would be surprised by the results shown in the attached Table A2.

It is declared by undersigned that all statements made herein of undersigned's own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the U.S. Code; and that such willful false statements may jeopardize the validity of this Application or any patent issuing thereon.

Yukako Taka
Yukako Taka

Dated: This 18th day of October, 2005.

Encl: Tables A1 and A2

Table A1: Recording Sheet:

Recording Sheet	Compound used	1,2-bonded type PBD	Carbon number
Q1	Poly bd R45HT	20%	210
Q2	E-1000-8	58%	70
2	B-2000	65%	150
1	B-1000	85%	75

Table A2: Evaluation Results

Recording Sheet	Gas Discoloration: M	Gas Discoloration: C	Delamination	Remarks
Q1	78%	82%	B2	Comp.
Q2	81%	84%	B2	Comp.
2	91%	89%	A	Inv.
1	93%	90%	A	Inv.